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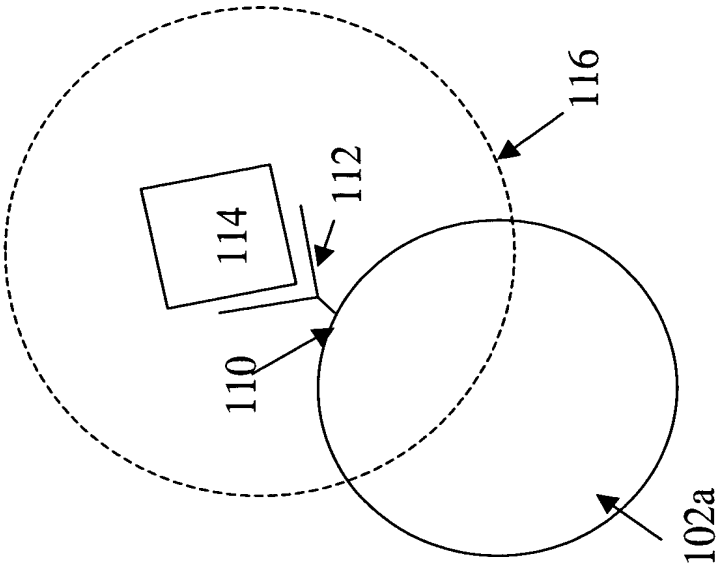


Fig. 1B

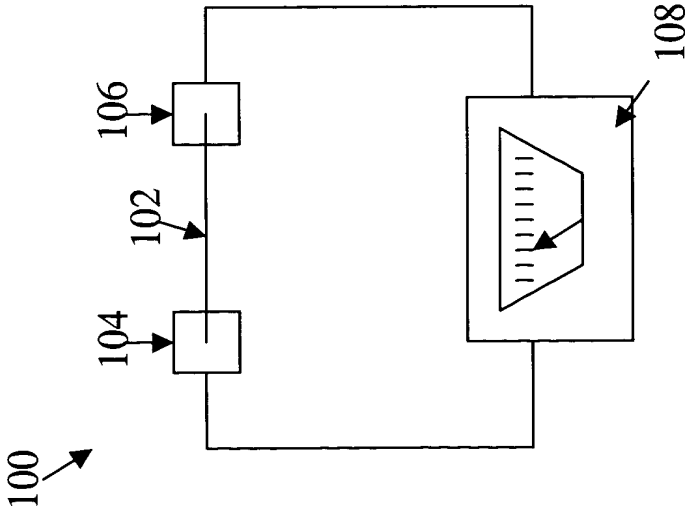


Fig. 1A

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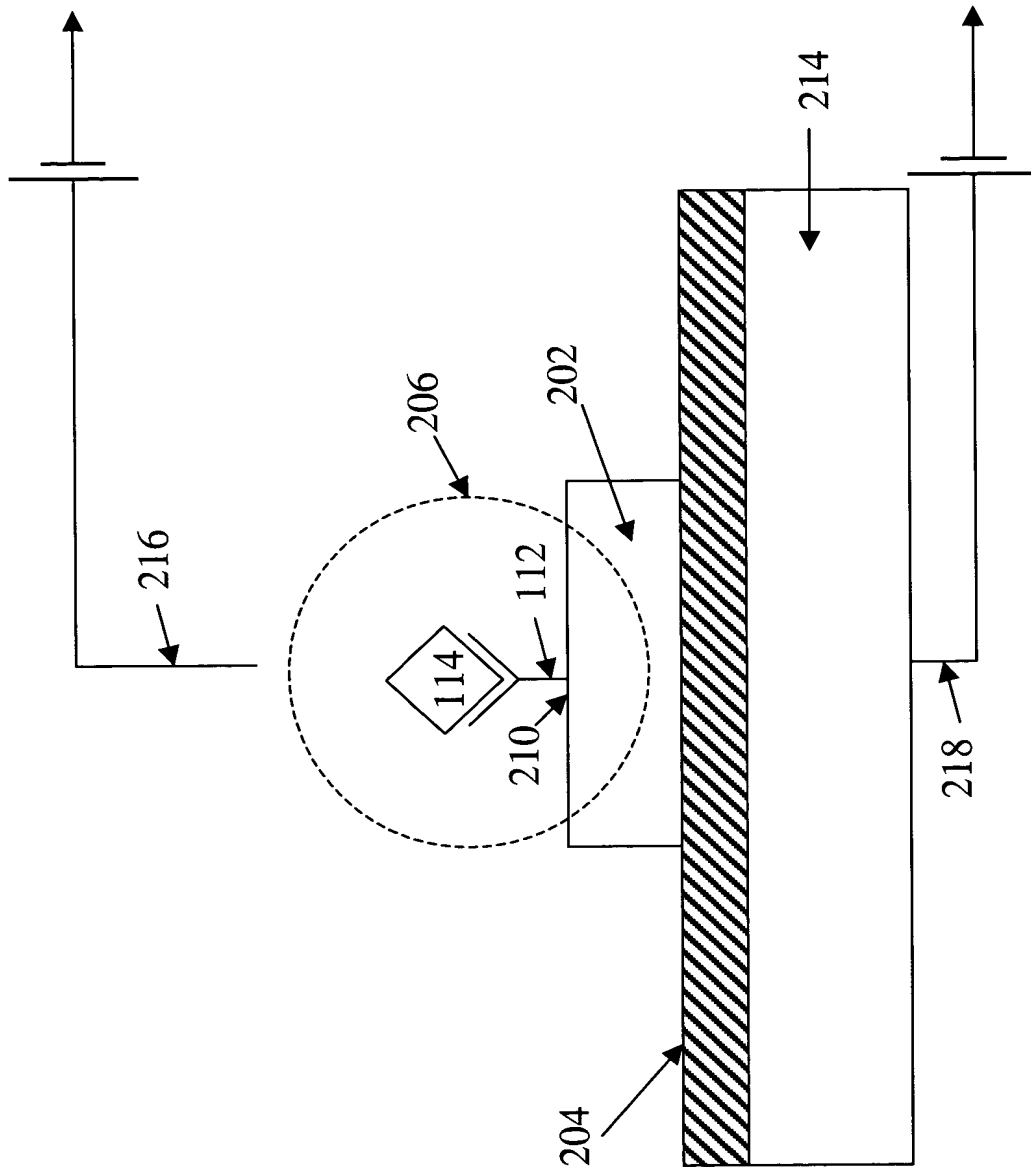
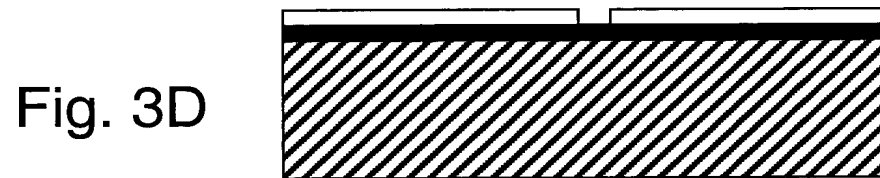
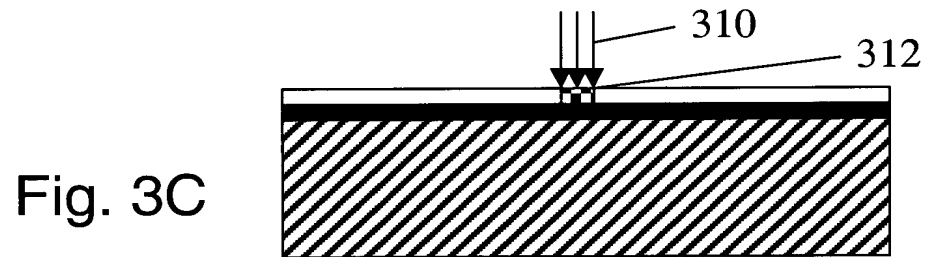
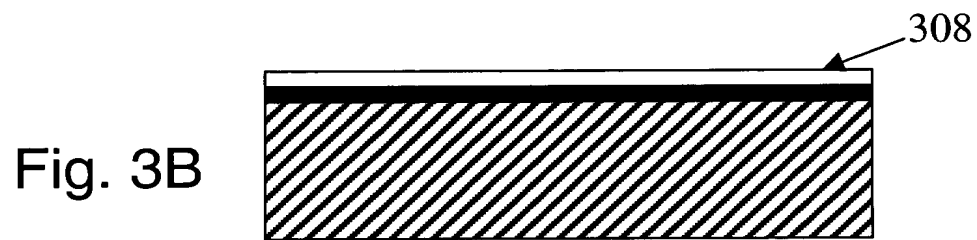
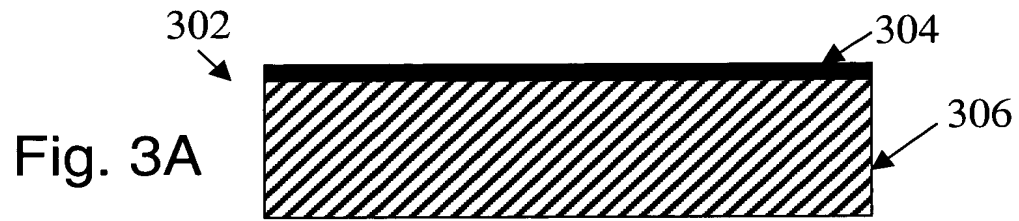


Fig. 2

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Fig. 3E

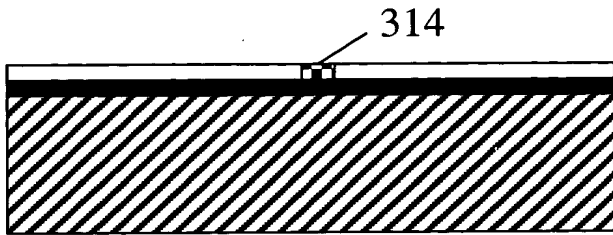


Fig. 3F

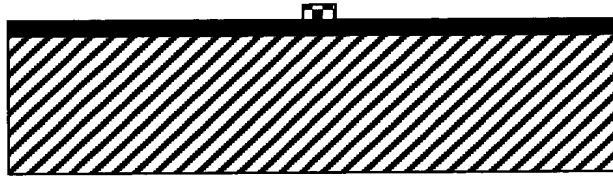


Fig. 3G

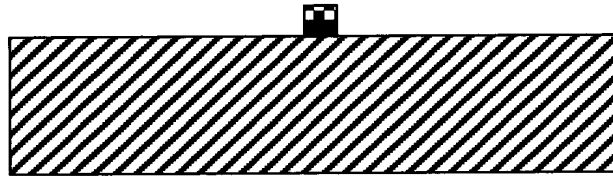
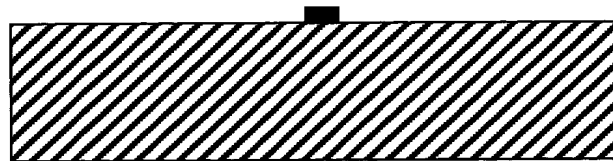


Fig. 3H



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Fig. 4A

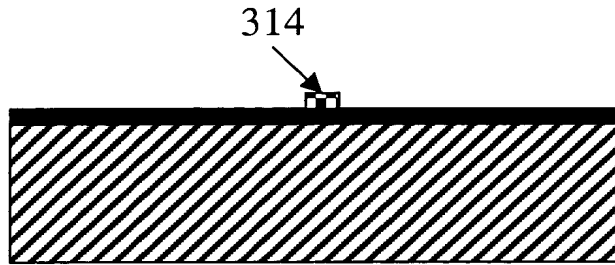


Fig. 4B

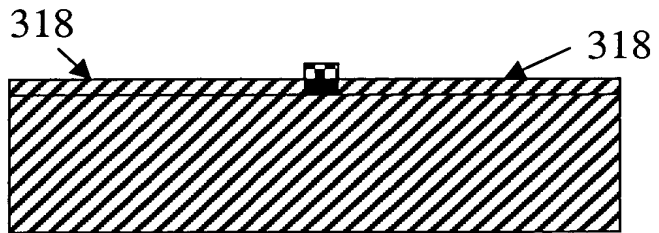
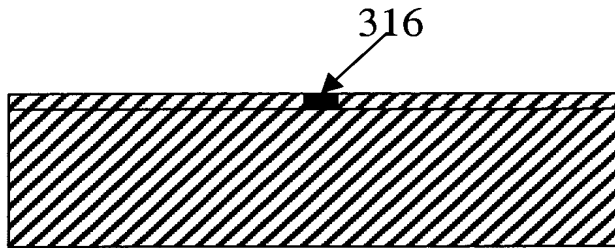
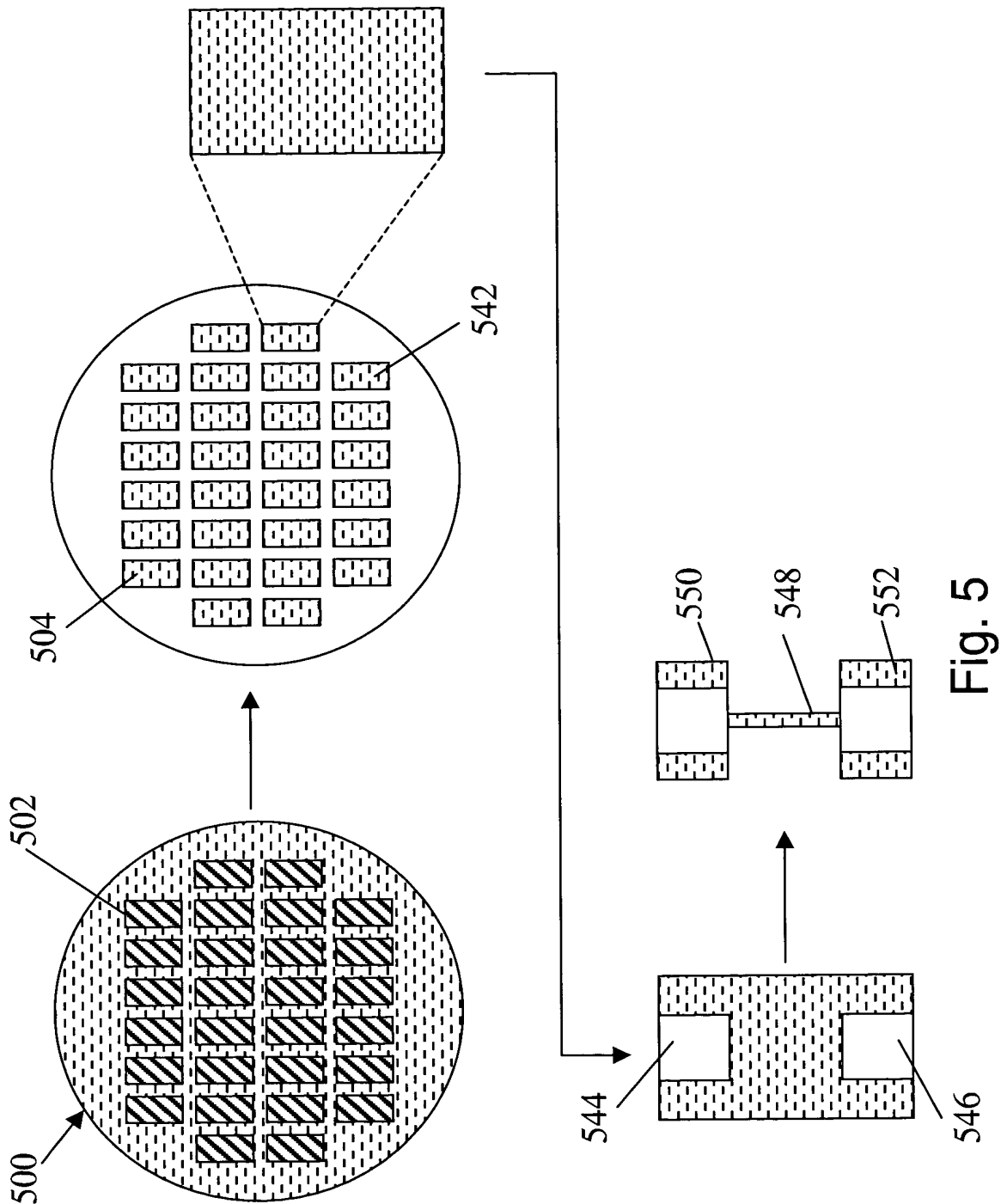


Fig. 4C



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Fig. 6A

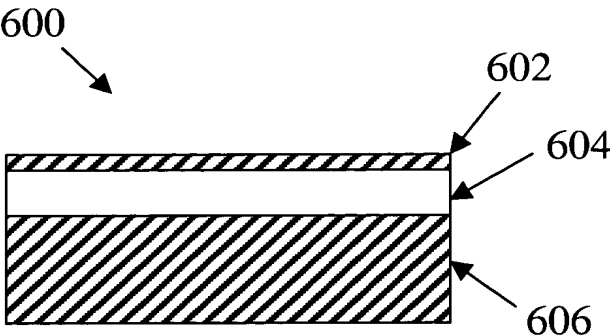


Fig. 6B

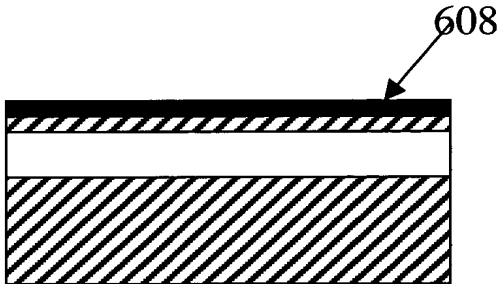
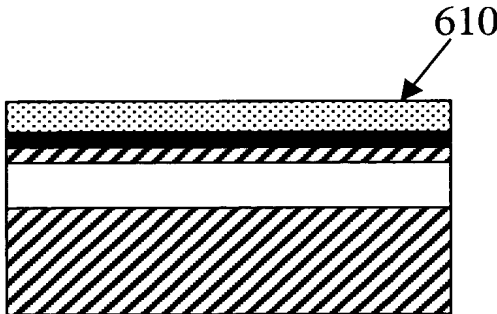


Fig. 6C



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Fig. 6D

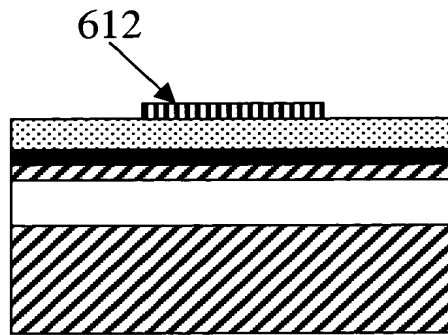


Fig. 6E

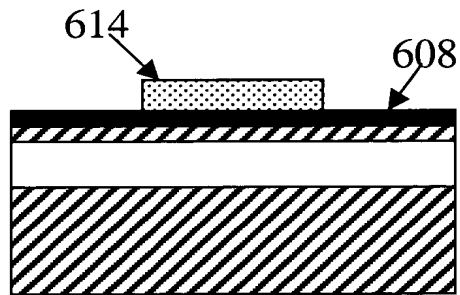
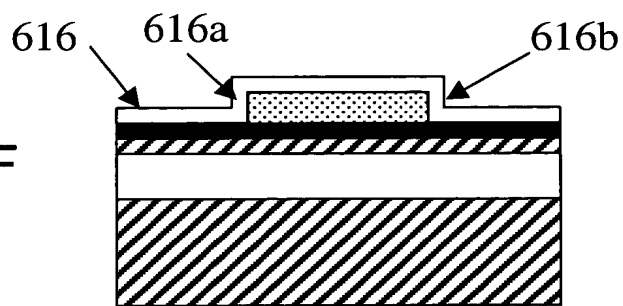


Fig. 6F



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Fig. 6G

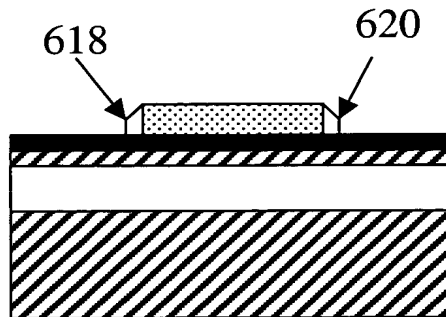


Fig. 6H

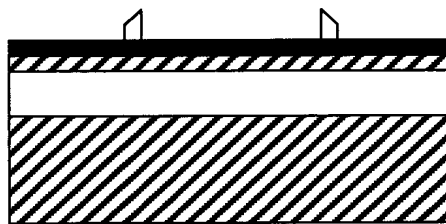
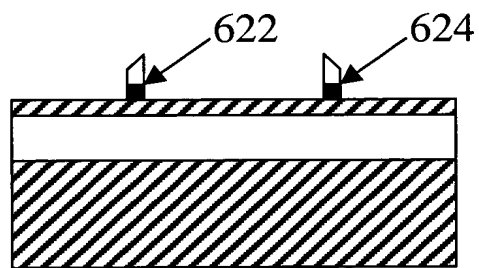


Fig. 6I



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Fig. 6J

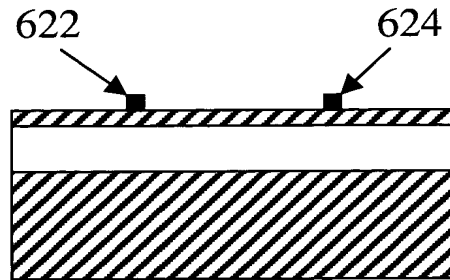


Fig. 6K

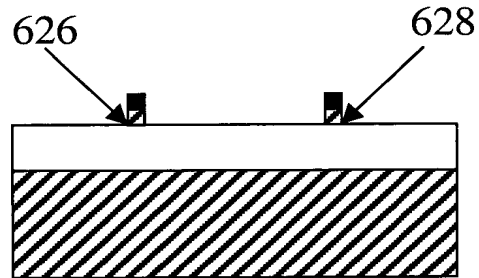
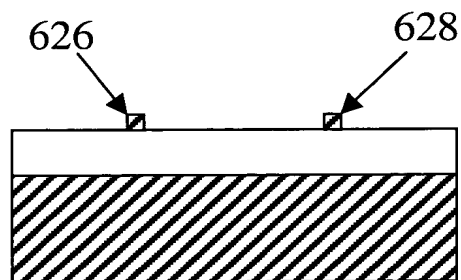
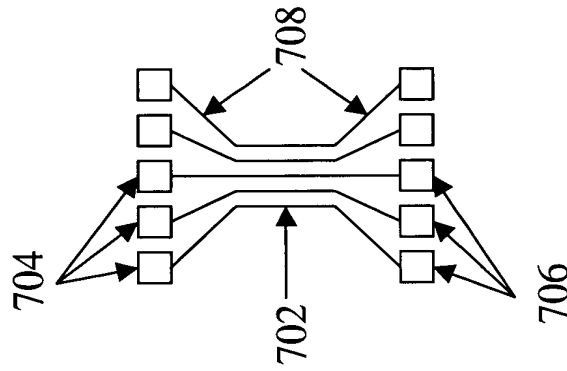
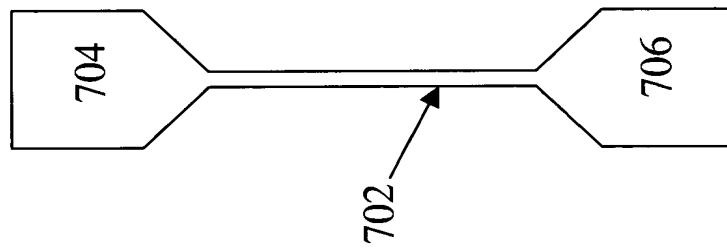


Fig. 6L



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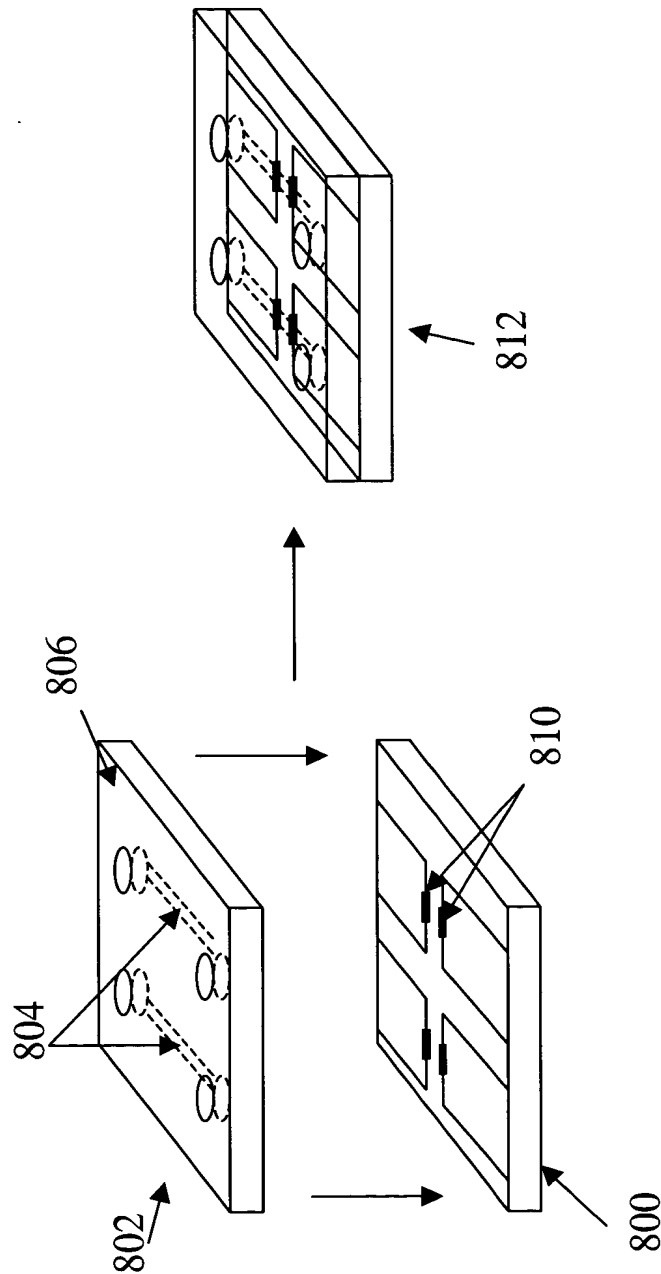


Fig. 8

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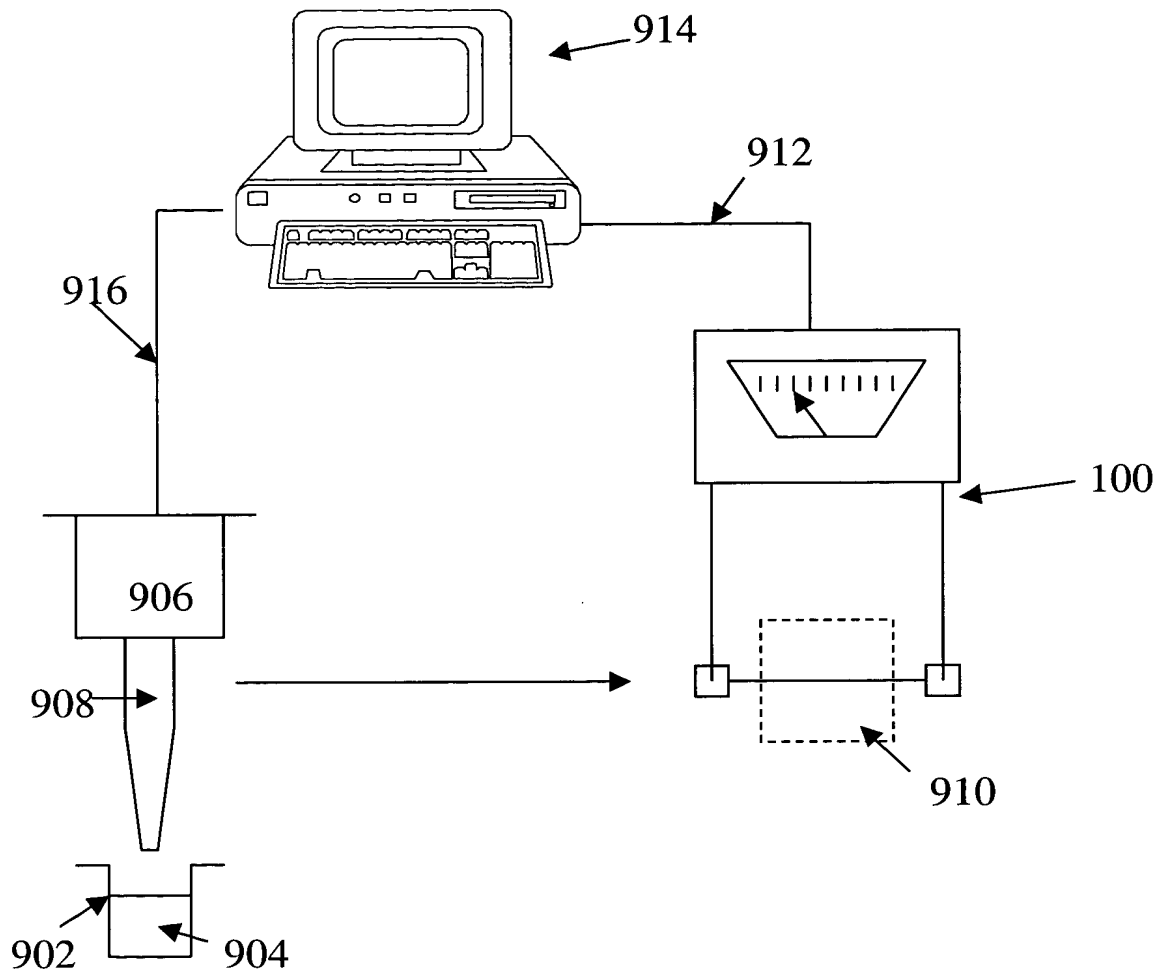


Fig. 9

A cross-sectional view of a semiconductor device. A central channel region (1002) is defined by two side gate regions (1004) and a top gate region (1006). The side gate regions (1004) are formed by a stack of a conductive layer (1012) and an insulating layer (1014). The top gate region (1006) is formed by a stack of an insulating layer (1010) and a conductive layer (1016). The channel region (1002) is formed by a stack of a conductive layer (1008) and an insulating layer (1014). The device is shown in a cross-sectional view with a central channel and side gates.

Fig. 10A

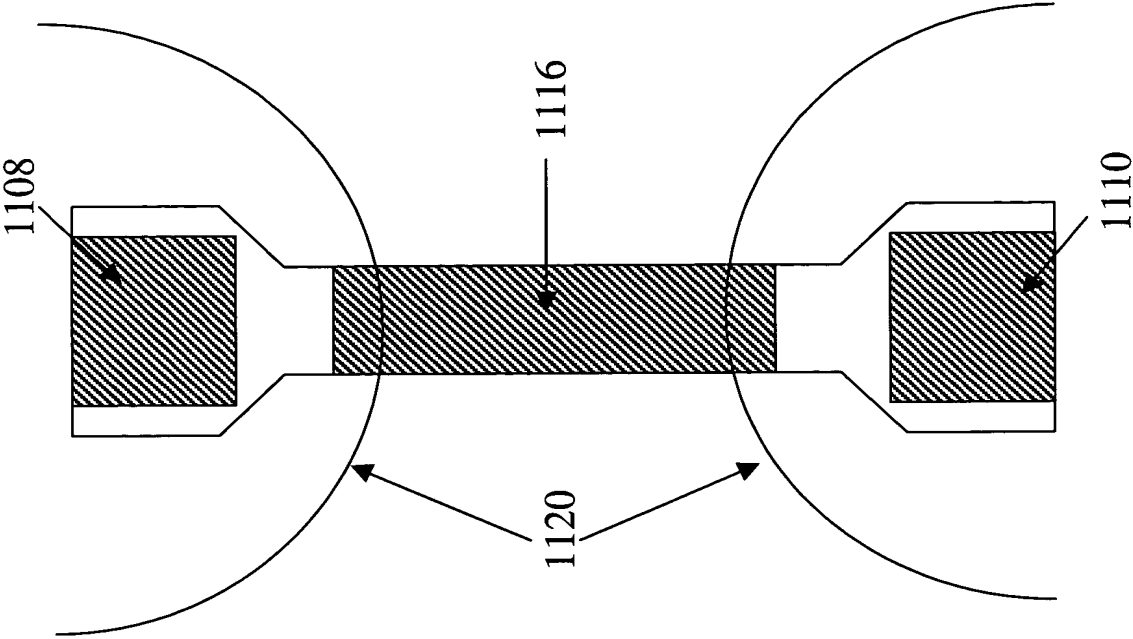


Fig. 11B

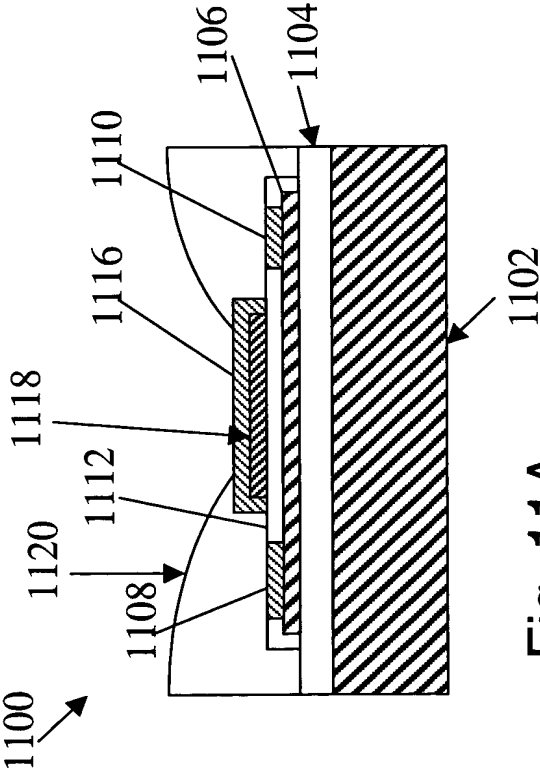


Fig. 11A

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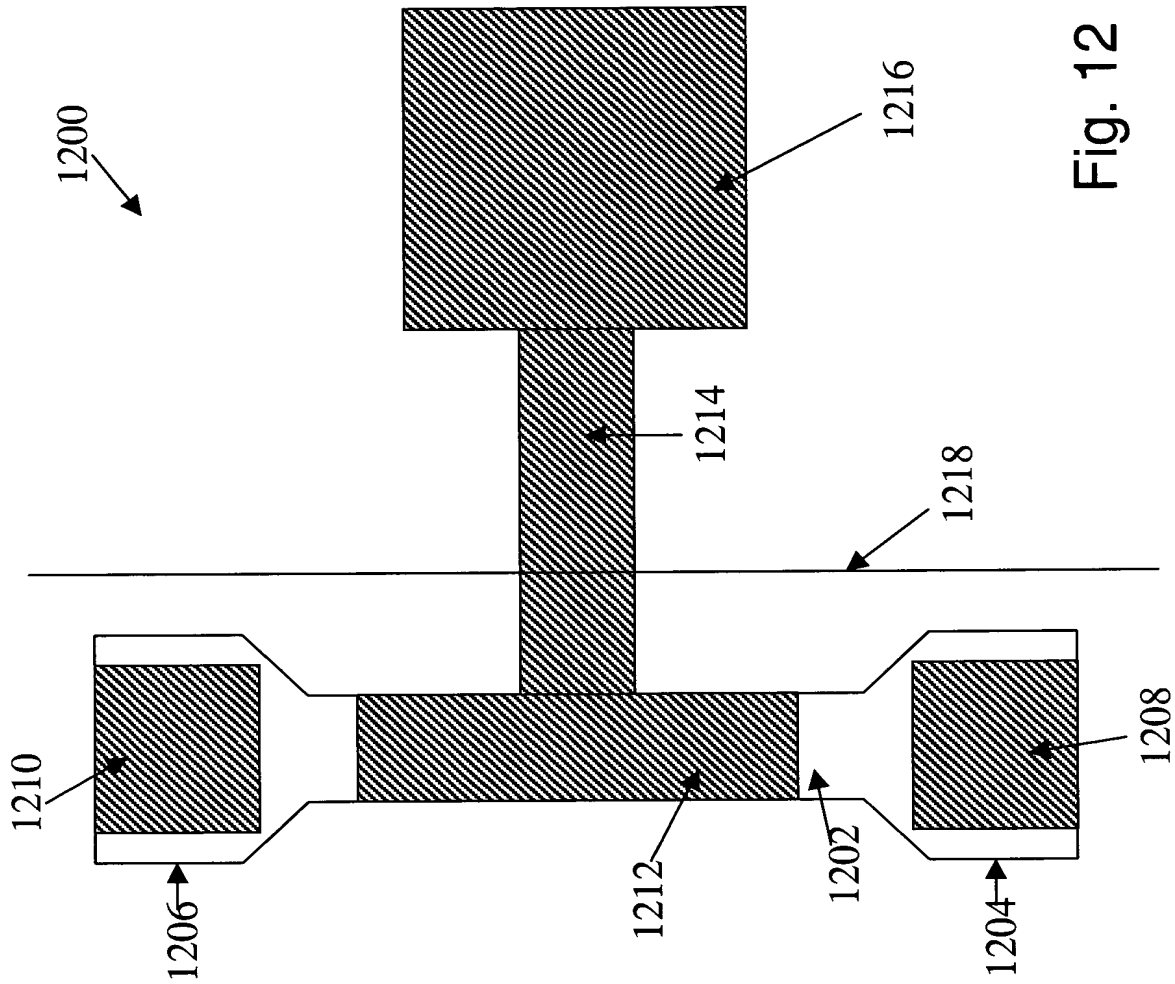


Fig. 12

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pH curves unmodified wir

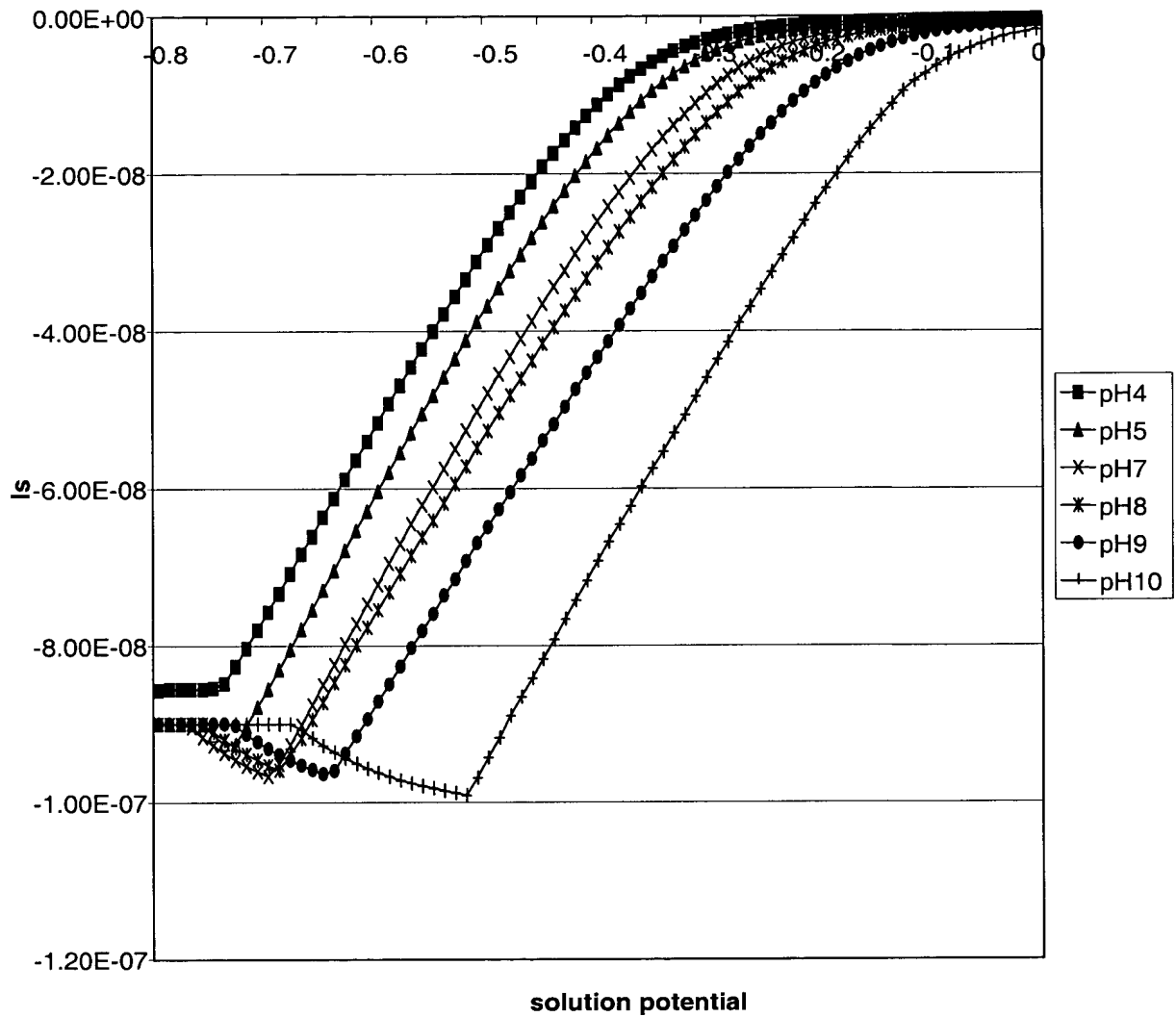


Fig. 13A

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pH r spons

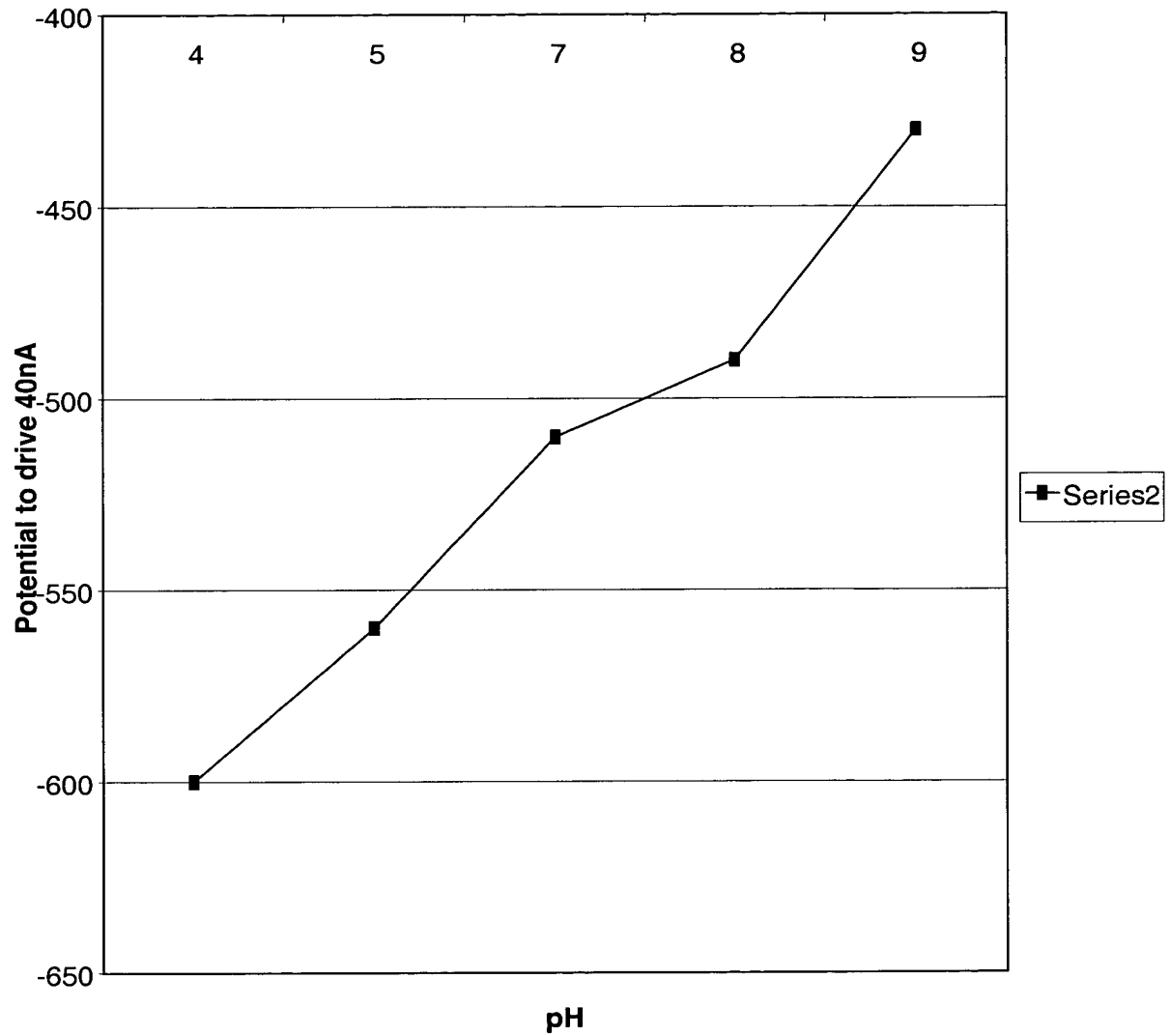


Fig. 13B

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Drift over time pH7

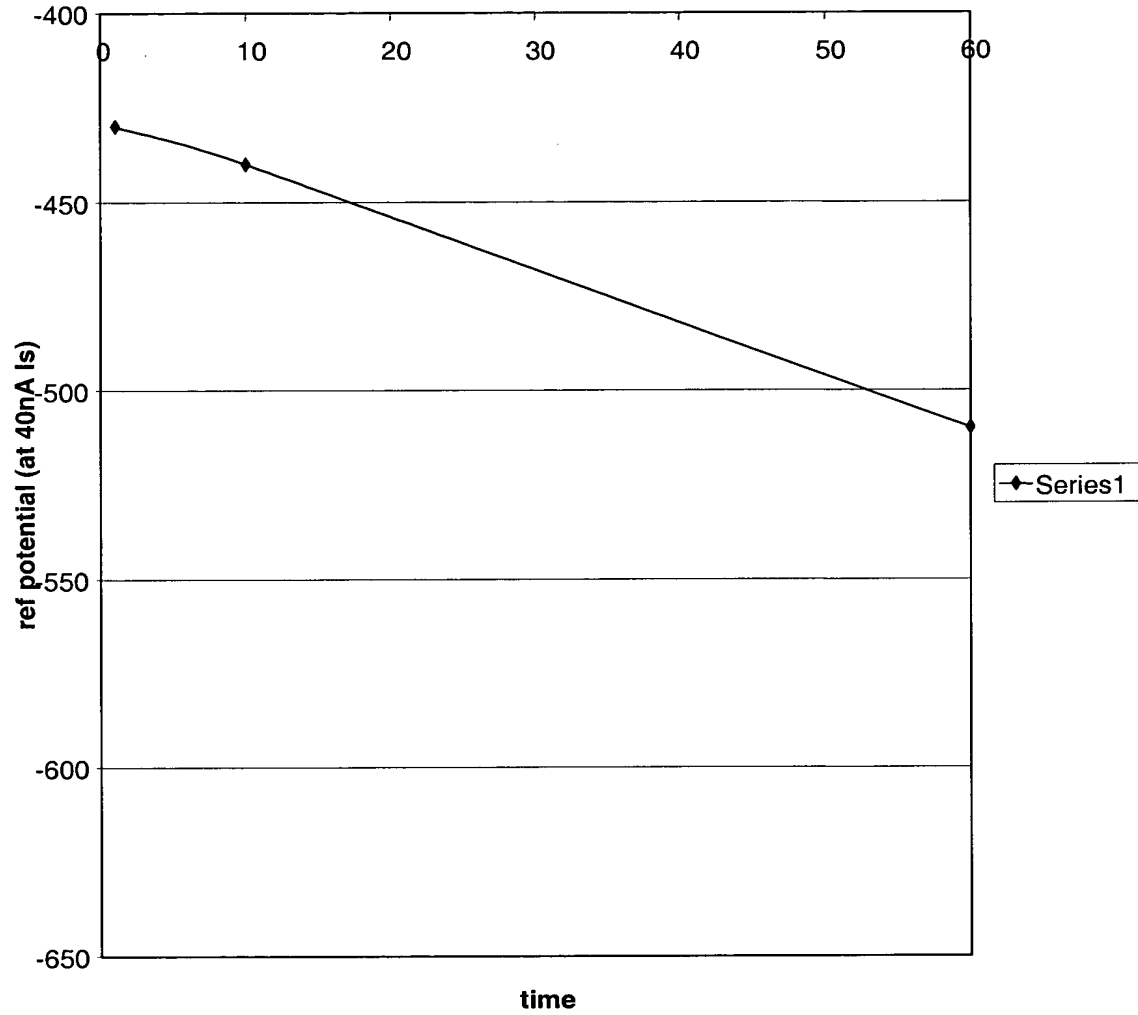


Fig. 13C

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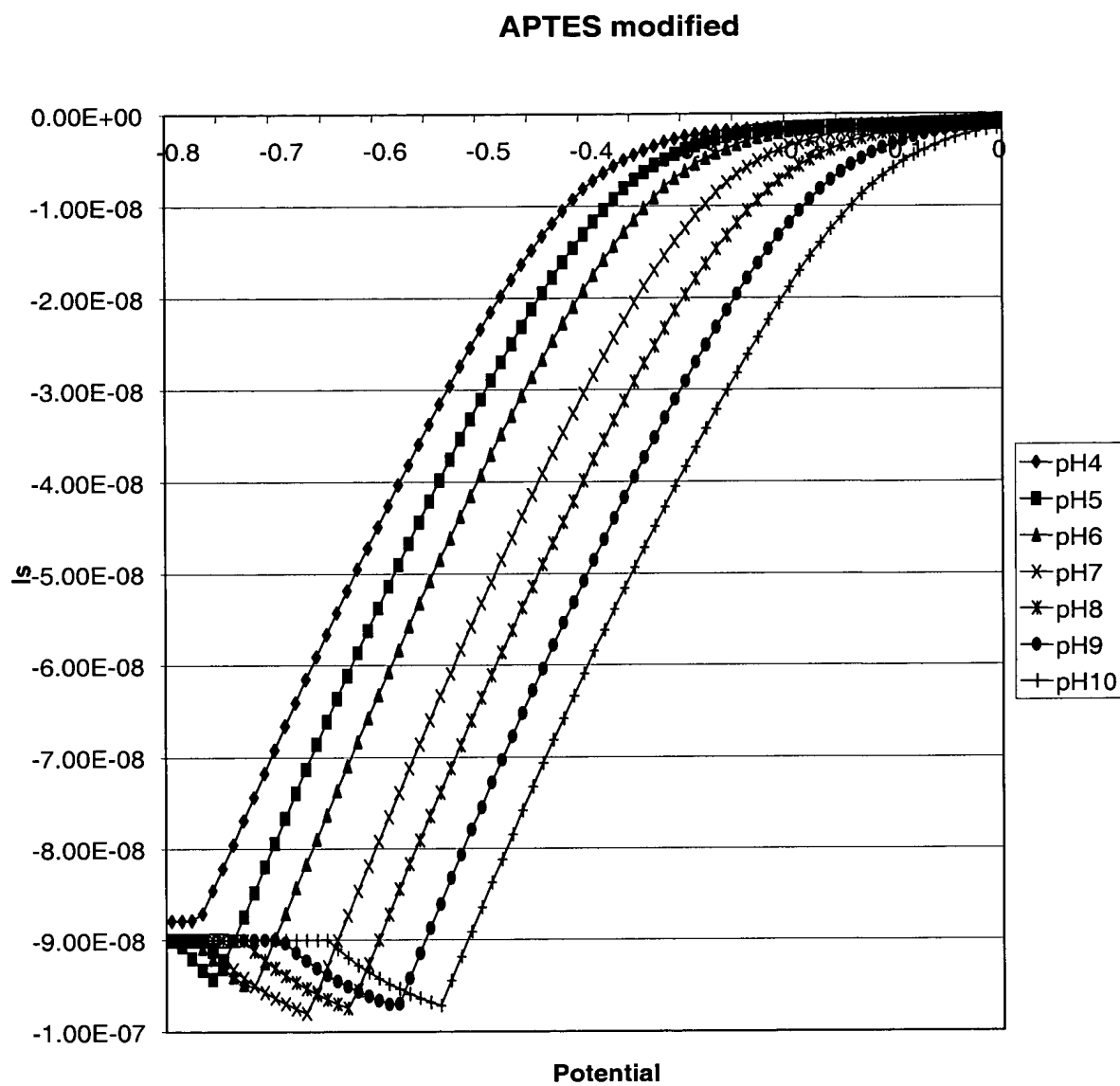


Fig. 14A

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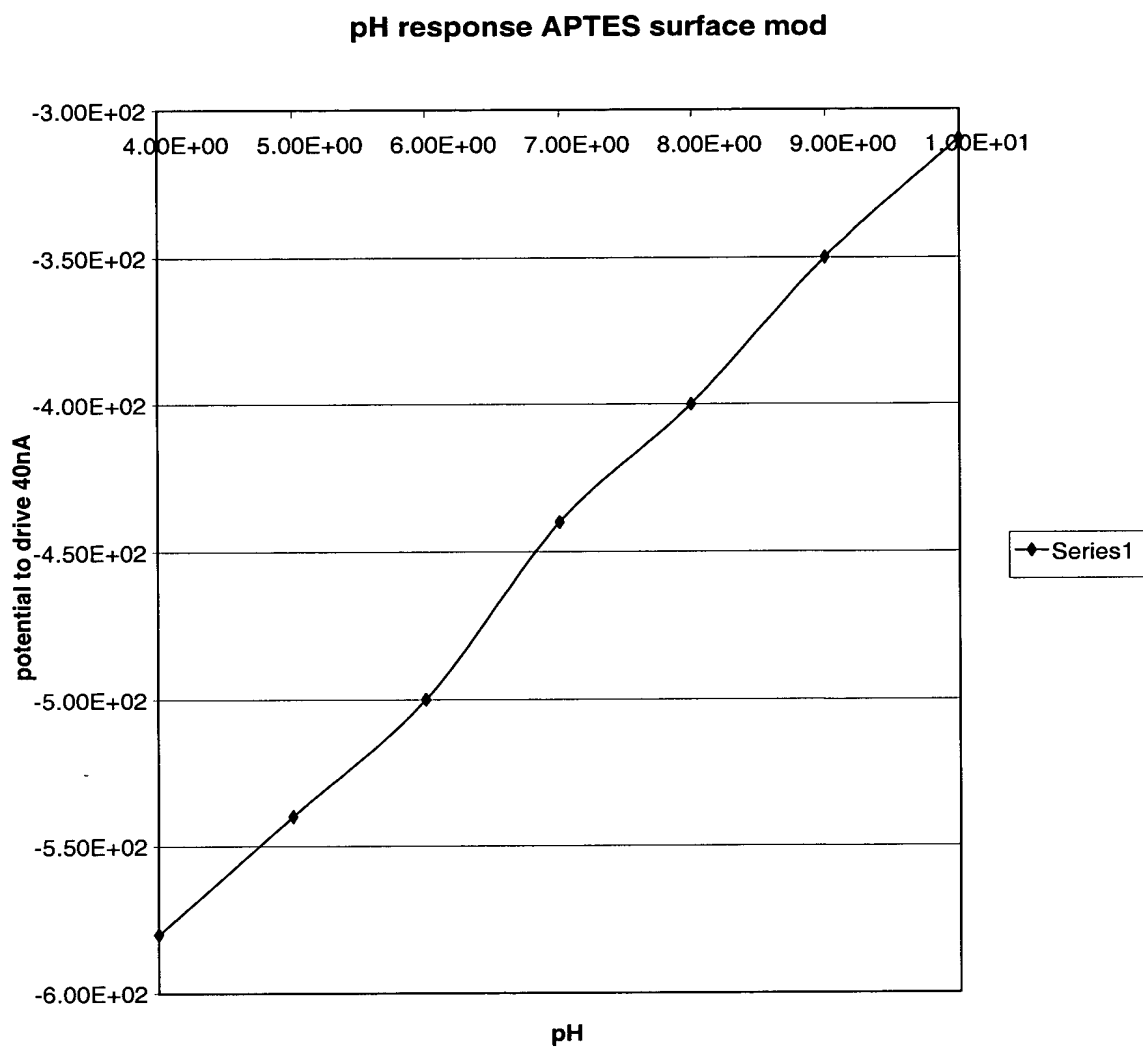


Fig. 14B

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pH7 drift APTES

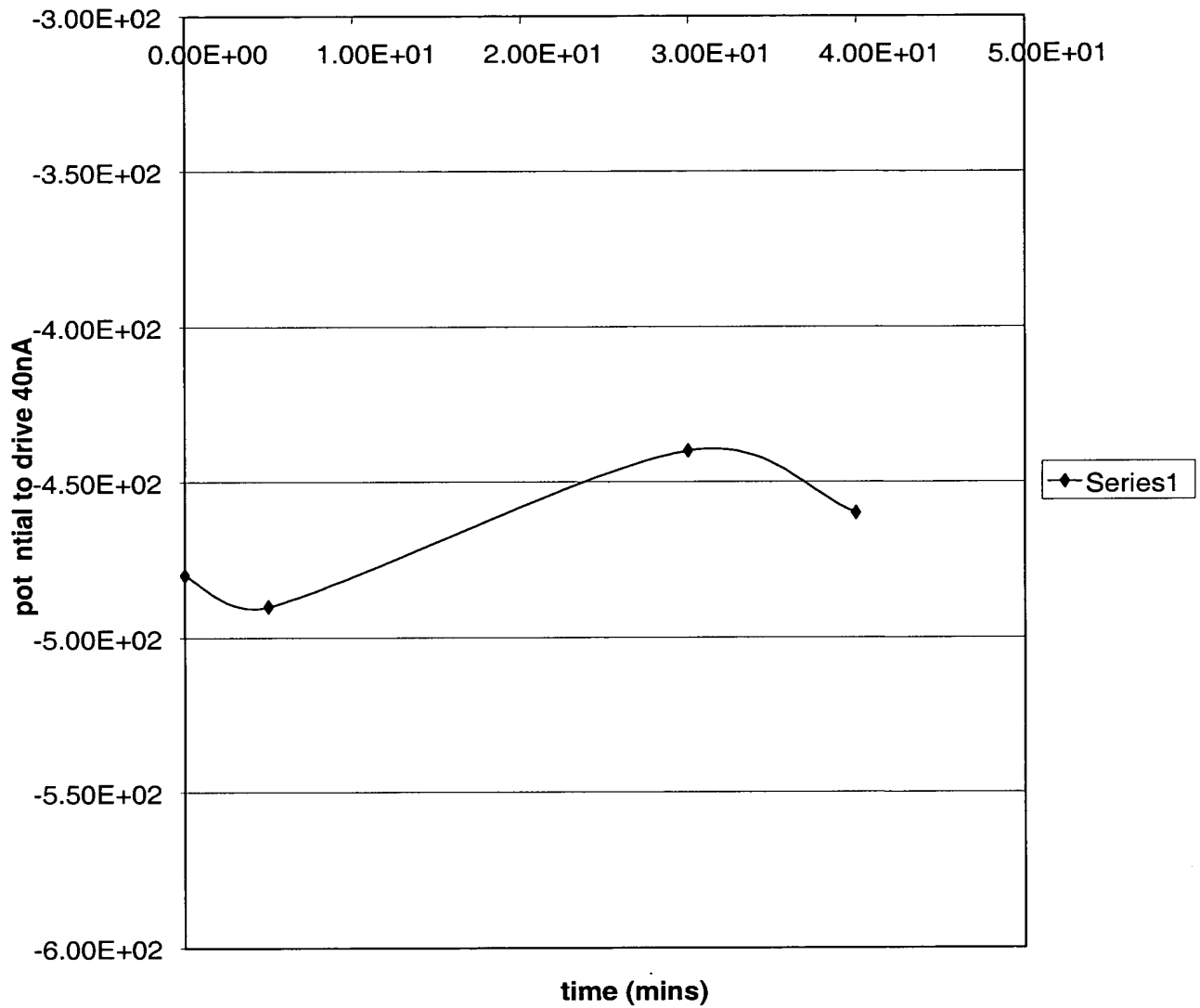


Fig. 14C

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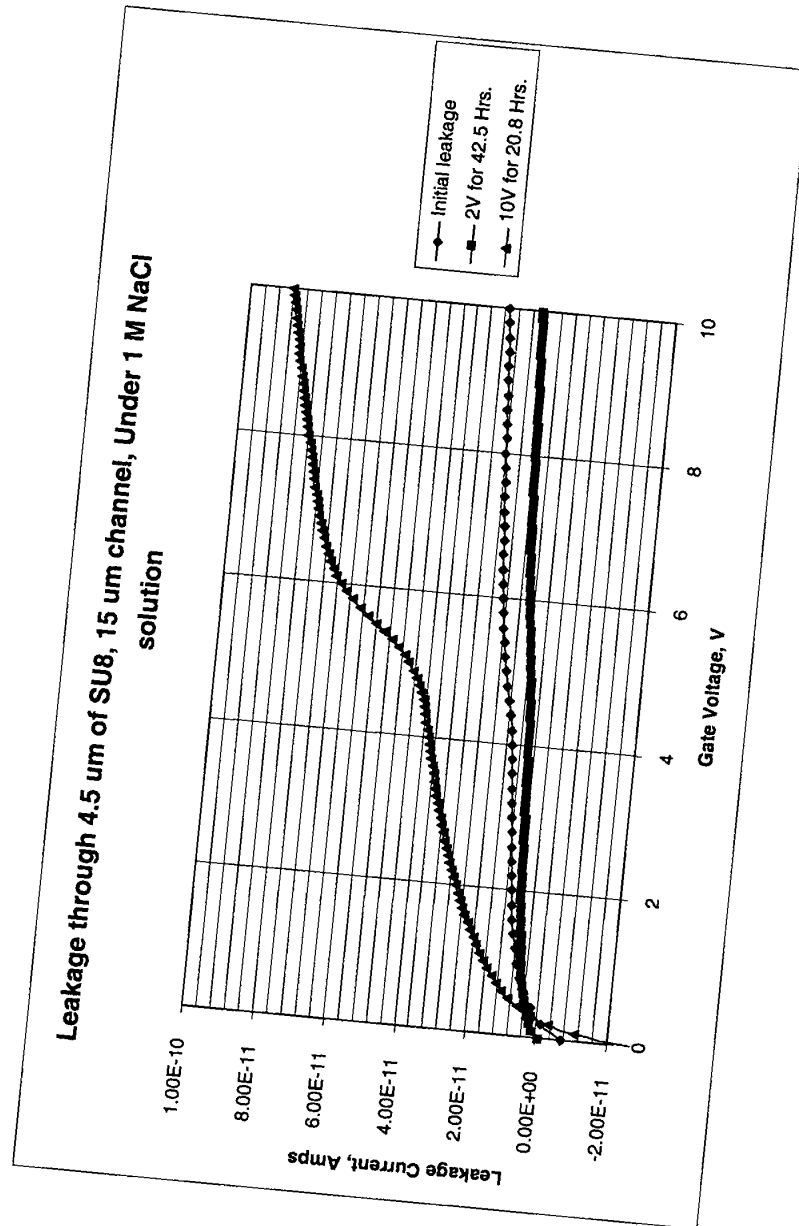


Fig. 15

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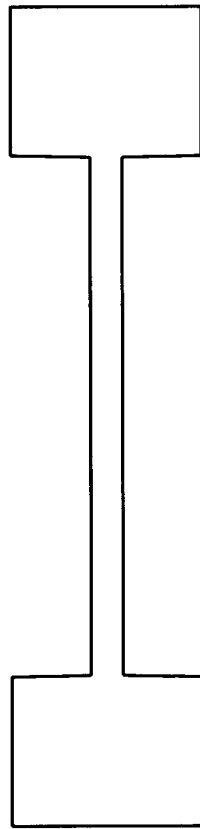


Fig. 16A

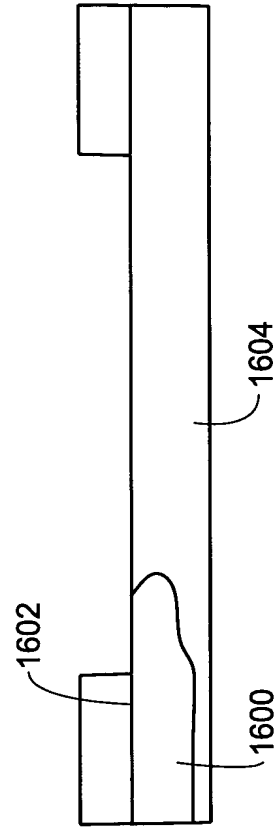


Fig. 16B

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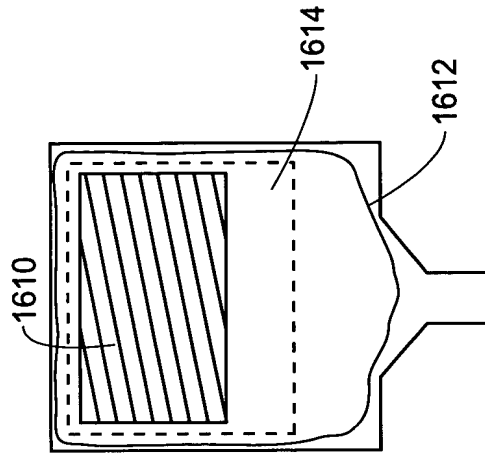


Fig. 16D

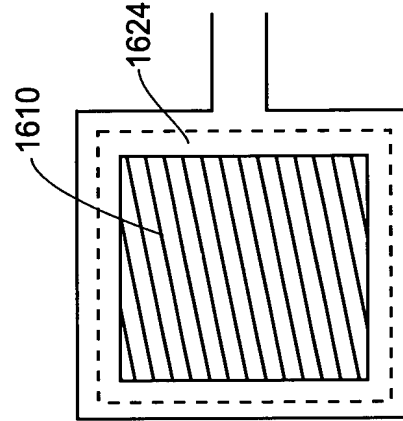


Fig. 16F

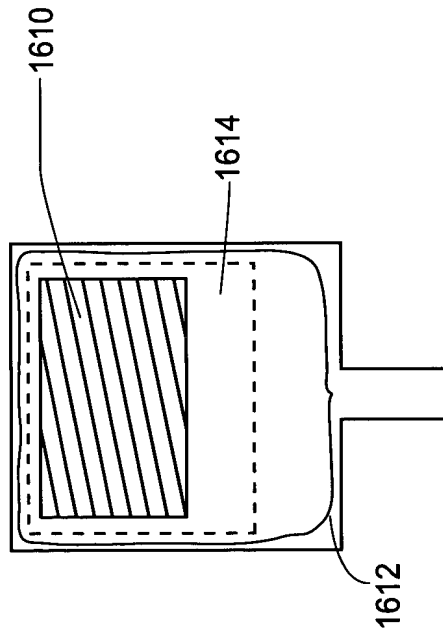


Fig. 16C

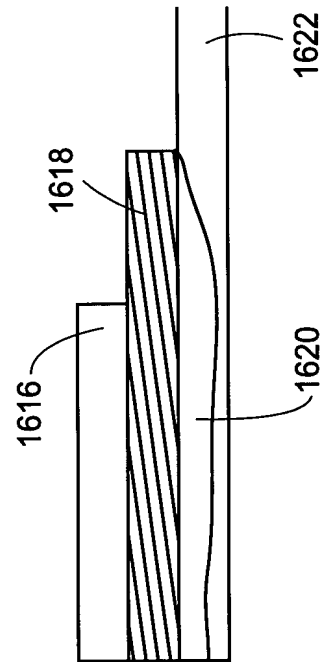


Fig. 16E